


Claims

1. Gear transmission comprising a first shaft (43),
an intermediate shaft (44) which is parallel to
the first shaft, a first cylindrical pinion (6)
which can rotate with the first shaft, a second
cylindrical pinion (6) which can rotate with the
intermediate shaft, the sets of toothing of the
first cylindrical pinion and the second
cylindrical pinion having the same number of teeth
and the same diameter and meshing with one
another, a third cylindrical pinion (5) which can
rotate with the first shaft, a fourth cylindrical
pinion (5) which can rotate with the intermediate
shaft, the sets of toothing of the third
cylindrical pinion and the fourth cylindrical
pinion having the same number of teeth and the
same diameter, a double-toothed face gear (38)
mounted between and, ^{RESPECTIVELY} meshing with the sets of
toothing of the third cylindrical pinion and the
fourth cylindrical pinion, the double-toothed face
gear being able to rotate about a second shaft
which forms an angle with the first shaft, wherein
the double-toothed face gear (38) is provided with
a coupling toothing (39) for slideably coupling
the rotation of the double-toothed face gear (38)
to the rotation of the second shaft, and the
direction of the coupling toothing is
perpendicular to the plane of the sets of toothing
of the double-toothed face gear.
2. The gear transmission as claimed in claim 1,
wherein the double-toothed face gear is designed
as a large ring with the face-gear toothing on
either side and the coupling toothing on the
internal diameter.
3. The gear transmission as claimed in claim 2,
wherein the internal diameter of the sets of face-
gear toothing of the double-toothed face gear more

- 12 -

d1
cont

or less corresponds to the internal diameter of the large ring.

4. The gear transmission as claimed in claim 1, 2 or 3, wherein the length of the coupling toothing is greater than half the width of the sets of toothing of the double-toothed face gear.
5. The gear transmission as claimed in one of the preceding claims, characterized in that the sets of toothing of the double-toothed face gear match one another, and the tooth spaces and teeth are symmetrical with respect to a plane which lies centrally between the sets of toothing.
6. The gear transmission as claimed in one of claims 2-5, wherein the large ring has a thickness of at least four times the tooth height of one of the sets of toothing of the double-toothed face gear.
7. The gear transmission as claimed in one of the preceding claims, wherein the third and fourth cylindrical pinions (5) and the double-toothed face gear (38) are helically toothed, and the third and fourth pinions are both right-hand or left-hand pinions.

d1
cont

8. The gear transmission as claimed in one of the preceding claims, wherein the cylindrical pinions (5, 6) are helically toothed, and the first and second cylindrical pinions ~~are right-hand pinions~~ *have the same direction* ~~as the third and fourth cylindrical pinions when mounted on the same shaft, are also right-hand pinions, and are left-hand pinions if the third and fourth cylindrical pinions are also left hand pinions.~~
9. The gear transmission as claimed in claim 8, wherein the pitch of cylindrical pinions mounted

- 13 -

21
cont

on the same shaft is identical.

10. The gear transmission as claimed in one of the preceding claims, characterized in that the double-toothed face gear (38) is mounted slideably on the housing of a differential of a vehicle.